CLARK COUNTY
STAFF REPORT

DEPARTMENT: Public Works

DATE: June 15, 2021

REQUESTED ACTION: Approve the 2020 Annual Bridge Report

_X_ Consent ____ Hearing ____ County Manager

BACKGROUND

Public Works has completed the Annual Bridge Report for 2020, as required by Washington Administrative Code 136-20-060. The report summarizes the condition of 111 bridges within Clark County, including bridges owned by the cities of Battle Ground, Camas, La Center, Vancouver, Ridgefield and Washougal. Of the 111 bridges, 75 are in good condition, 27 are in fair condition, and one is in poor condition. The remaining eight bridges are either railroad or pedestrian bridges, which are not assigned a condition.

In 2020, Public Works completed the load-rating evaluations of all qualifying 56 National Bridge Inventory Bridges owned by Clark County. This was in response to changes in federal regulations that added new loading configurations to account for certain types of large hauling vehicles and emergency vehicles that are now being used. Of the 56 load rated bridges, 18 bridges required load restrictions and have been posted.

After being awarded two Federal Highway Bridge Program grants, for a total sum of $2,488,840, Clark County is in the process of drafting plans that will strengthen or rehabilitate nine of the load-restricted bridges in order to eliminate the current restrictions. Construction activities are currently planned for the summer of 2022.

COUNCIL POLICY IMPLICATIONS

None.

ADMINISTRATIVE POLICY IMPLICATIONS

None.

COMMUNITY OUTREACH

The Annual Bridge Report will be posted on the Public Works website. Extensive public outreach will be conducted prior to any construction activities.

BUDGET IMPLICATIONS

YES	NO	
X		Action falls within existing budget capacity.
	X	Action falls within existing budget capacity but requires a change of purpose within existing appropriation.
	X	Additional budget capacity is necessary and will be requested at the next supplemental. If YES, please complete the budget impact statement. If YES, this action will be referred to the county council with a recommendation from the county manager.

BUDGET DETAILS

Local Fund Dollar Amount	N/A
Grant Fund Dollar Amount	N/A
Account	N/A
Company Name	N/A

ATTACHMENTS: (1) 2020 Annual Bridge Report

Robert Klug

Rob Klug
Transportation Division Manager

Ahmad Qayoumi

Ahmad S. Qayoumi, PE
Public Works Director/County Engineer

Cherie Sabug

Cherie Sabug for Eva Haney, CGFM
Finance Division Manager

Primary Staff Contact: Rani Jaafar, Ext. 1618

APPROVED: Gilee J. O'Brien
CLARK COUNTY, WASHINGTON
CLARK COUNTY COUNCIL

DATE: June 15, 2021

SR# 107-21

CLARK COUNTY, WASHINGTON 1844

Grist Mill Bridge No. 69

2020 ANNUAL BRIDGE REPORT

CLARK COUNTY
WASHINGTON

PUBLIC WORKS

Submitted by
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County Engineer
Public Works Director

Prepared by
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Clark County Public Works, Engineer III

Submitted June 2021

TABLE OF CONTENTS

I. INTRODUCTION

This bridge report is prepared by Clark County Public Works Department each year to fulfill the requirements of the Washington Administrative Code (WAC) 136-20-060. The WAC requires:

Each county engineer shall furnish the county legislative authority with a written report of the findings of the bridge inspection effort. This report shall be made available to said authority and shall be consulted during the preparation of the proposed six-year transportation program revision. The report shall include the county engineer's recommendations as to replacement, repair or load restriction for each deficient bridge. The resolution of adoption of the six-year transportation program shall include assurances to the effect that the county engineer's report with respect to deficient bridges was available to said authority during the preparation of the program.

The bridge inspections follow the National Bridge Inspection Standards (NBIS), which are published in the Code of Federal Regulations, 23 CFR 650, subpart C. The NBIS sets national standards for the proper safety inspection and evaluation of bridges and applies to all structures defined as highway bridges on public roads. The county uses the Washington State Bridge Inspection Manual, which details state policies and procedures for inspecting bridges and assessing their condition.

This report summarizes the county's 2020 bridge program, activities and findings. These programs help prioritize the maintenance and preservation of county bridges and identify complete bridge replacements before they significantly affect the county's transportation network.

II. BRIDGE INVENTORY

There are 111 public bridges located throughout Clark County. Of these bridges:

- 78 bridges owned by Clark County.
- 27 bridges owned by cities and inspected under interagency agreements.
- 6 bridges owned by the railroads (BNSF Railway, Chelatchie Prairie Railroad) and inspected for roadway safety.

For a number of years, Clark County has been performing routine bridge inspections for the city-owned bridges in the cities of Battle Ground, Camas, La Center, Ridgefield, Vancouver, and Washougal. Starting May 1, 2020, Clark County has no longer been performing routine bridge inspections for the 27 bridges owned by the cities. As such, since May 1, 2020, the cities have been responsible for conducting these inspections with either in-house staff or consultants with certified inspectors. The 27 city owned bridges are tabulated in Table A in the Appendix. In addition to its 13 bridges, the City of Vancouver is now also responsible for performing roadway safety inspections on the streets that pass under the 6 bridges owned by the railroads since they are located within its city limits.

Bridges are identified throughout this report by the bridge name followed by the bridge number, e.g., ***Betts Bridge No. 26***. A complete bridge inventory is included in Table A in the Appendix. As referenced above, 27 bridges are owned by the cities of Vancouver, Camas, Washougal, Ridgefield, Battle Ground, and La Center, and six are owned by BNSF Railway or Chelatchie Prairie Railroad

and are inspected for roadway safety. The following map, *Clark County Bridge Locations Figure 1*, illustrates the distribution of county-owned and city-owned bridges throughout the county, in each councilor's district.

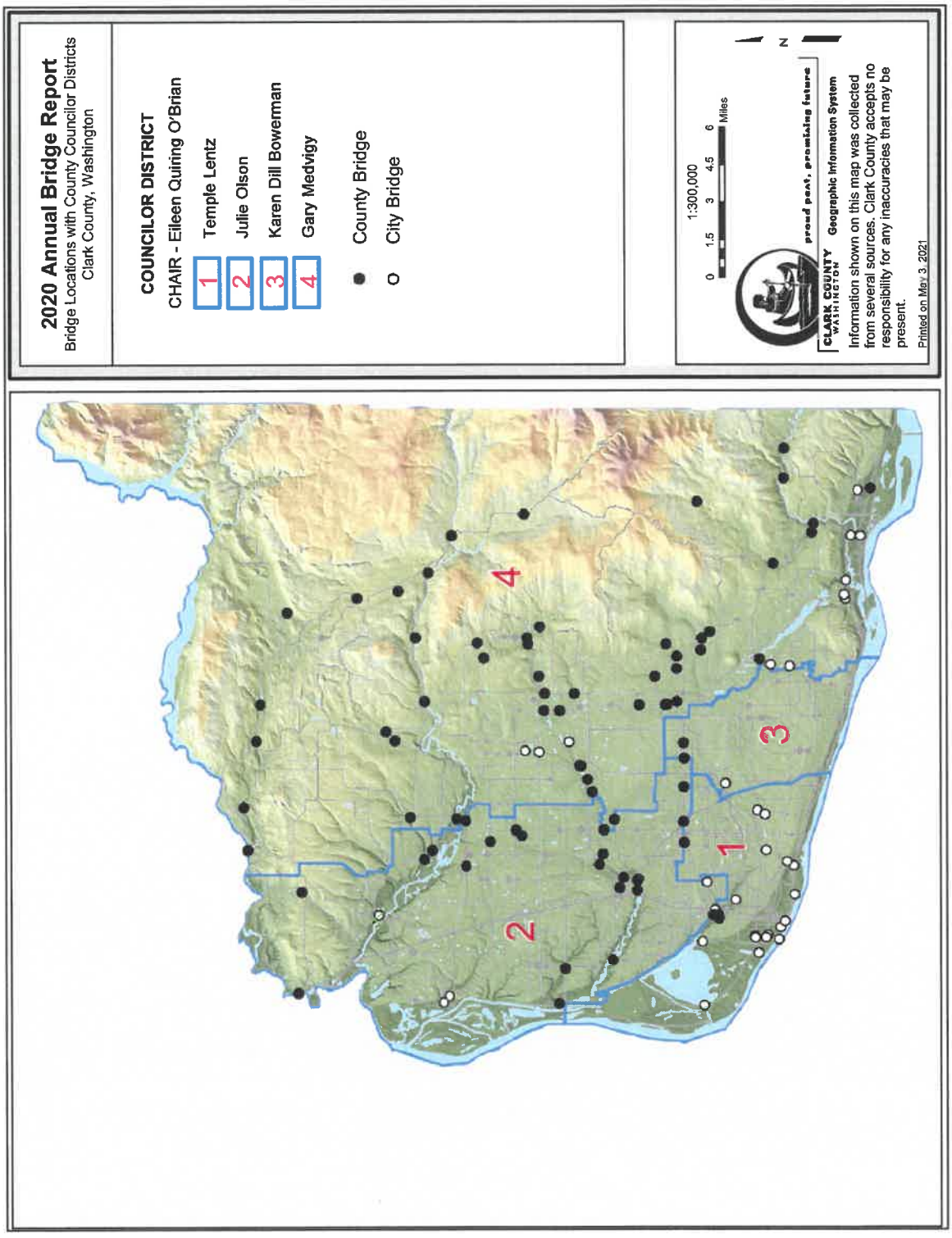


Figure 1 Clark County Bridge Locations Map

III. BRIDGE INSPECTION FINDINGS AND REPAIRS

A. Bridge Inspection Findings

NBIS mandates that public agencies inspect and report on all bridges at least once every two years. Under these standards, the county is required to document and report the current condition of each bridge, determine the degree of wear or deterioration, and recommend repairs or needed services. Deficient bridges, such as load-restricted bridges, may require more frequent inspections.

Day Break Bridge No. 273 – Scour Critical Bridge.

A total of 48 bridge inspections, 34 county bridges and 14 city bridges, were conducted in 2020. During these bridge inspections, inspectors evaluated the condition of the bridge structure and documented any observable deficiencies. When deficiencies were spotted, they were noted in the report and a deficiency report was generated and provided to the Road Maintenance and Operations Division for follow up. Any urgent structural or safety concerns were addressed promptly. No significant findings resulted from this year's routine bridge inspections.

Eleven county bridges are considered scour critical and require special inspection after storms for erosion, debris, and stream bank instability. As a result of these post-flooding inspections, Matney South Bridge No. 169 and Day Break Bridge No. 273 were submitted for scour mitigation preventative maintenance grants. Davis Bridge No. 232 is currently in the design phase and is scheduled to be replaced during the summer of 2022. Smith Bridge No. 211, Lehto Bridge No. 294, and Salmon Creek Bridge No. 331 received scour countermeasures upgrade during the summer of 2020.

The bridge inspection reports are generated, reviewed and entered into Bridge Works, a bridge management database developed by the Washington State Department of Transportation (WSDOT) Bridge Preservation office. This database is a master inventory of all structures that are the responsibility of WSDOT. State transportation officials verify that Clark County bridges comply with NBIS standards and report the information to the Federal Highway Administration (FHWA).

One measure that provides an overview of a bridge's condition is the Sufficiency Rating (SR). The SR is a numeric value that indicates a bridge's relative ability to serve its intended purpose. The SR is the summation of four calculated values: Structural Adequacy and Safety, Serviceability and Functional Obsolescence, Essentiality for Public Use, and Special Reductions. A SR is calculated for each bridge using the inspector's ratings for individual features of the bridge. Geometric layout, traffic volume, and the length of a detour route are also used in calculating the SR. The SR ranges from zero (a bridge that is closed and cannot carry traffic loads) to 100 (a new bridge with no deficiencies). The average SR of the entire inventory provides a comparative look at the health of county bridges from one year to the next.

Overall, the average SR for the county inventory of bridges over the past 13 years ranged from a low of 75.2% in 2010 and 2011 to a high of 77.4% in 2018. Figure 2 illustrates a histogram of the average annual SR over each of the past 13 years.

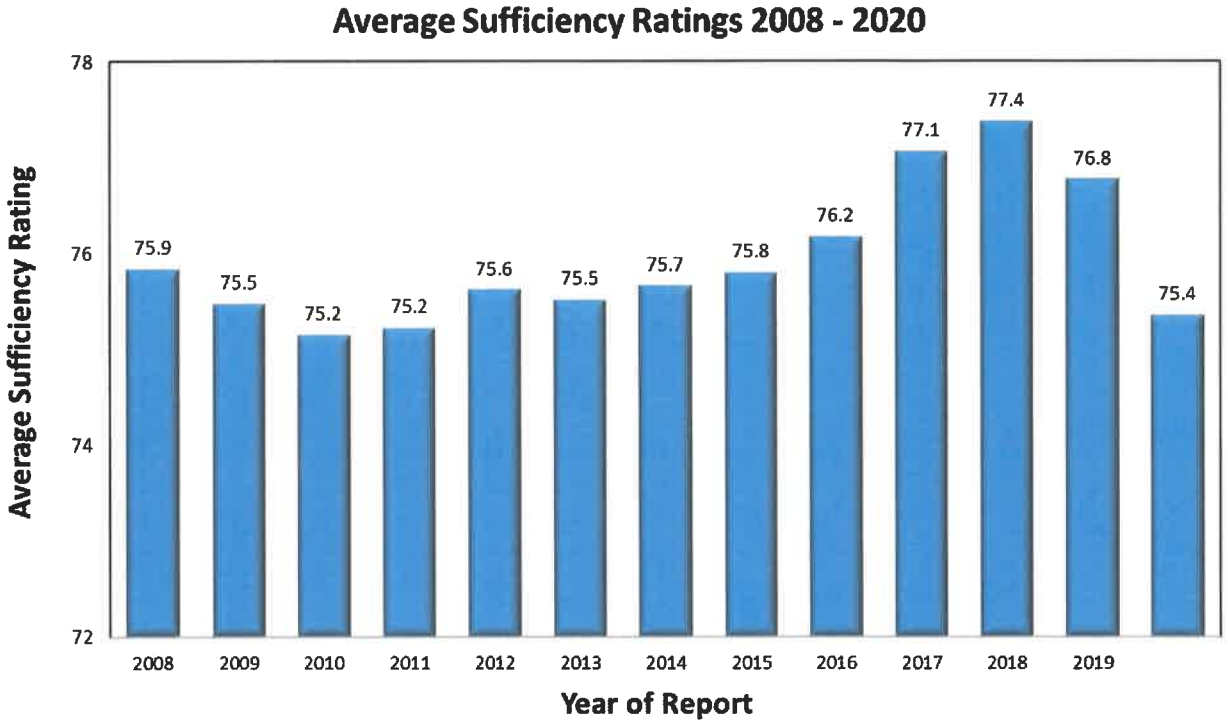


Figure 2: Average Annual Sufficiency Rating (SR) Clark County's Bridges

Figure 3 presents a pie chart of the age of the county bridges, in which the bridges were divided into four general categories: (1) less than 25 years old, (2) between 25 and 49 years old, (3) between 50 and 74 years old, and (4) over 75 years old. Approximately, 6 out of every 10 bridges were built over 50 years ago indicative of an aging bridge inventory in Clark County.

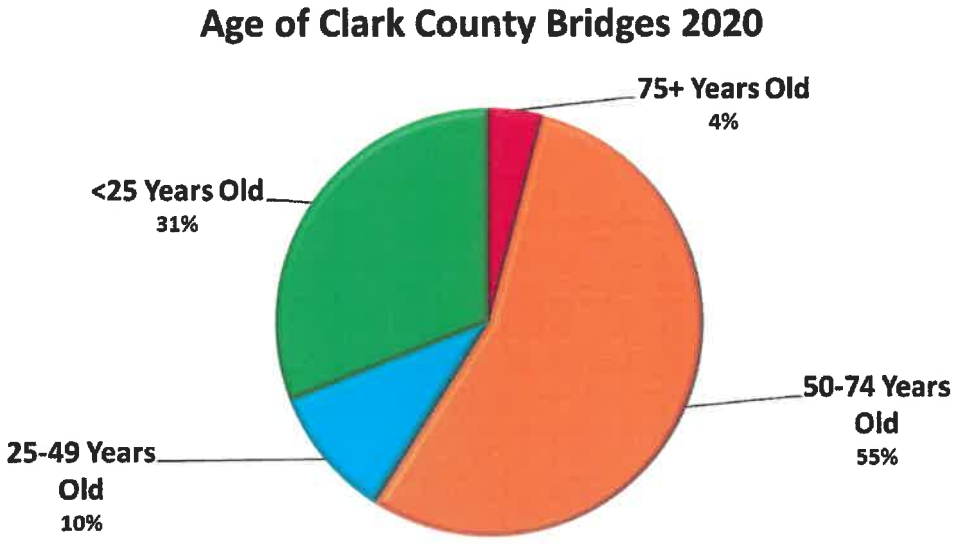


Figure 3: Distribution of Clark County's Bridges by Age

Generally speaking, bridges with an SR greater than 50 have a fair amount of useful life remaining. Bridges with an SR less than 50 require more attention and may need major repairs or complete replacement. The Bridge Replacement Advisory Committee, a WSDOT-sponsored committee that helps determine how to allocate federal bridge funds, is only screening bridges with an SR of 40 or less for replacement eligibility and an SR of 80 or less for rehabilitation eligibility. Although the current SR for the overall county inventory is 75.4, there are four individual bridges with an SR below 50 and one of those with SR below 40. There is a direct correlation between the SR and the age of the bridge. The average SR rating will begin to decline if bridge maintenance and repairs needs are not addressed.

In addition to using the SR as a bridge condition measure, the NBIS defines two types of deficient bridges – **structurally deficient** and **functionally obsolete.**

A ***structurally deficient bridge,*** as defined by the FHWA, is one with a condition or design that has affected its ability to carry its intended traffic loads. An example is a bridge that has significant load carrying elements in poor condition due to deterioration or damage. Another example is a bridge with an inadequate waterway opening underneath that causes flooding over the bridge deck or adjacent roadway, triggering significant traffic disruptions. The fact that a bridge is "structurally deficient" does not mean the bridge is unsafe or likely to collapse. It does, however, indicate the bridge typically will require significant maintenance and repair to remain in service and ultimately will require replacement or major rehabilitation. Clark County and the City of Vancouver currently each have two structurally deficient bridges.

A ***functionally obsolete bridge*** is one in which the deck geometry, load carrying capacity, clearance or approach roadway alignment does not meet accepted design standards. While structural deficiencies are generally the result of deterioration of bridge components, functional obsolescence typically results from older bridge configurations that are subject to increased traffic demands and are substandard structures, as defined by current bridge design codes. Examples include narrow lane/ shoulder widths and height restrictions of less than 14 feet. Clark County's inventory has 14 bridges that are listed as Functionally Obsolete while the city of Camas has four and the cities of Ridgefield, Battle Ground and Washougal each have one. A summary of structurally deficient and functionally obsolete bridges is presented below in Table 1.

Table 1: Functionally Obsolete & Structurally Deficient Bridges

Agency	Number of Bridges	Functionality Obsolete	Structurally Deficient
Clark County	78	14	2
City of Vancouver	13	0	2
City of Camas	6	4	0
City of Washougal	3	1	0
City of Ridgefield	2	1	0
City of Battle Ground	2	1	0
City of La Center	1	0	0
Railroad (BNSF-5, CPR-1)	6	N/A	N/A
Total	111	21	4

IV. RESTRICTED BRIDGES

If a bridge deficiency is severe and repairs cannot restore full load capability, load restriction signs for trucks are posted at each end of the bridge. Recent federal regulations have required that load ratings be updated to include Special Hauling Vehicles (SHV), including single unit vehicles SU4, SU5, SU6, and SU7, and emergency vehicles (EV), including single (EV2) and tandem (EV3) vehicles. Currently, three county bridges are height-restricted, and 18 county bridges are weight-restricted as presented below in Table 2. Figure 4 presents the weight restrictions currently posted for Morgan Bridge No. 213.

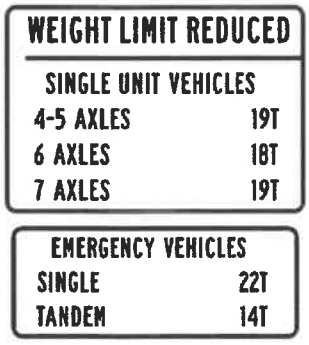


Figure 4: Morgan Bridge No. 213 weight restrictions

Table 2: Height and Load Limited Bridges in Clark County

Bridge Name	Bridge No.	Action
CCRR Undercrossing – Old 99	20141	Height Restricted
Grist Mill	69	Height Restricted
BNRR – Marine Park Way OC	99906-05	Height Restricted
Gibbons Creek	6	Weight Restricted
Whipple Creek	11	Weight Restricted
Knapps Station	12	Weight Restricted
Flatwood	30	Weight Restricted
Pleasant Valley	33	Weight Restricted
Carson	63	Weight Restricted
Rock Creek	96	Weight Restricted
Lucia Falls	116	Weight Restricted
Matney	168	Weight Restricted
Matney South	169	Weight Restricted
Brush Prairie	201	Weight Restricted
JC Ward	212	Weight Restricted
Morgan	213	Weight Restricted
Venersborg	217	Weight Restricted
167th Morgan	222	Weight Restricted
172nd Avenue	229	Weight Restricted
Van Atta	275	Weight Restricted
Landon	299	Weight Restricted

V. BRIDGE CONSTRUCTION/ACCOMPLISHMENTS IN 2020

1. Clark County continued to develop procedures and resources for emergency response to natural disasters.

2. Clark County completed load rating evaluations on all National Bridge Inventory (NBI) Bridges.

3. Clark County replaced two undersized culverts along Manley Road with NBI fish passable culverts.

4. Clark County is in the process of designing the strengthening / rehabilitation on nine load-restricted bridges: (i) Gibbons Creek Bridge No. 6, (ii) Flatwood Bridge No. 30, (iii) Rock Creek Bridge No. 96, (iv) Lucia Falls Bridge No. 116, (v) Matney Bridge No. 168, (vi) Morgan Bridge No. 213, (vii) Venersborg No. 217, (viii) 167th Morgan Bridge No. 222, and (ix) Landon Bridge No. 299. The purpose of this project is to eliminate load restrictions on these bridges. Construction activities are projected for the summer of 2022.

5. Clark County completed the scour rehabilitation work at Smith Bridge No. 211, Lehto Bridge No. 294, and Salmon Creek Bridge No. 331.

6. Clark County completed the design plans and specifications for the replacement of Davis Bridge No. 232 to address a critical scour issue. The construction is scheduled for the summer of 2022 based on current availability of funds and grants.

7. Clark County submitted grant applications to: (1) perform strengthening / rehabilitation work on four load-restricted bridges (Whipple Creek No. 11, Knapps Station No. 12, Carson Bridge No. 63, and Matney South No. 169), and (2) scour rehabilitation work on two scour critical bridges (Matney South No. 169 and Day Break Bridge No. 273).

VI. FUTURE PLANS

- Install real-time flood monitoring sensors at preselected county bridges.

- Continue to support Parks and Railroad with their bridge needs. Facilitate the monitoring and assessment of their bridges and offering engineering support services as needed.

- Coordinate bridge barrier-railing upgrades with requirements for guardrail improvements by identifying safety needs.

- Continue to review private bridge designs.

- Enhance emergency preparedness. Plan and practice exercises will be developed.

- Complete load-rating evaluations on all non-NBI bridges. While the county currently load rates its NBI bridges, it has not rated the smaller bridges not of the NBI. Most of these bridges are near or past their design life.

- Participate in statewide discussions about programmatic approaches and asset management for short-span bridges.
- Complete the strengthening / rehabilitation design for the nine load-restricted bridges.
- Reconstruct Davis Bridge No. 232 to address critical scour concerns.
- Develop priority matrix to programmatically address identified bridge concerns.

GLOSSARY OF BRIDGE TERMINOLOGY

Abutment: a substructure supporting the end of a single span, or the extreme end of a multi-span superstructure and, in general, retaining or supporting the approach fill.

Backwall: the top-most portion of an abutment functioning primarily as a retaining wall to contain approach roadway fill.

Bent: a supporting unit of the beams of a span made up of one or more column or column-like members connected at their top-most ends by a cap, strut, or other horizontal member.

Bridge Replacement Advisory Committee: a WSDOT-sponsored committee that helps determine how to allocate federal bridge funds.

Bracing: a system of tension or compression members or a combination of these, connected to the parts to be supported or strengthened by a truss or frame. It transfers wind, dynamic, impact, and vibratory stresses to the substructure and gives rigidity throughout the complete assemblage. Can also refer to diagonal members that tie two or more columns of a bent together.

Cap: the horizontally-oriented, top-most piece or member of a bent serving to distribute the beam loads upon the columns and to hold the beams in their proper relative positions.

Chord: in a truss, the upper-most and the lower-most longitudinal members, extending the full length of the truss.

Compression: a type of stress involving pressing together; tends to shorten a member; opposite of tension.

Deck: portion of a bridge that provides direct support for vehicular and pedestrian traffic.

Elastomeric pads: rectangular pads made of neoprene, found between the sub- and superstructure that bears the entire weight of the superstructure. Elastomeric pads can deform to allow for thermal movements of the superstructure.

Endwall: the wall located directly under each end of a bridge that holds back approach roadway fill. The endwall is part of the abutment.

Fracture critical member: a member in tension or with a tension element whose failure would probably cause a portion of or the entire bridge to collapse.

Pier: a structure comprised of stone, concrete, brick, steel, or wood that supports the ends of the spans of a multi-span superstructure at an intermediate location between abutments. A pier is usually a solid structure as opposed to a bent, which is usually made up of columns.

Pile: a rod or shaft-like linear member of timber, steel, concrete, or composite materials driven into the earth to carry structure loads into the soil.

Pinpile: a series of two-inch-diameter pipes driven in a line into the ground to support the timber planks of a small retaining wall, typically used to prevent erosion under a bridge abutment.

Post or column: a member resisting compressive stresses, in a vertical or near vertical position.

Scour: erosive action of removing streambed material around bridge substructure due to water flow. Scour is of particular concern during high-water events.

Short span bridge: the characteristics of these bridges are a span less than 20 feet and typically supported by timber piles or shallow concrete footings.

Soffit: the underside of the bridge deck or sidewalk.

Spall: a concrete deficiency wherein a portion of the concrete surface is popped off from the main structure due to the expansive forces of corroding steel rebar underneath. This is especially common on older concrete bridges.

Stringer: a longitudinal beam (less than 30' long) supporting the bridge deck, and in large bridges, framed into or upon the floor beams.

Sufficiency rating: the sufficiency rating is a numeric value from 100 (a bridge in new condition) to 0 (a bridge incapable of carrying traffic). The sufficiency rating is the summation of four calculated values: Structural Adequacy and Safety, Serviceability and Functional Obsolescence, Essentiality for Public Use, and Special Reductions.

Substructure: the abutment, piers, grillage, or other structure built to support the span or spans of a bridge superstructure and includes abutments, piers, bents, and bearings.

Superstructure: the entire portion of a bridge structure which primarily receives and supports traffic loads and in turn transfers the reactions to the bridge substructure; usually consists of the deck and beams or, in the case of a truss bridge, the entire truss.

Tension: type of stress involving an action which pulls apart.

Trestle: a bridge structure consisting of beam spans supported upon bents. Trestles are usually made of timber and have numerous diagonal braces, both within each bent and from bent to bent.

UBIT: Under Bridge Inspection Truck

Wheelrail: a timber curb fastened directly to the deck, most commonly found on all-timber bridges.

Wingwall: walls that slant outward from the corners of the overall bridge that support roadway fill of the approach

APPENDIX TO THE 2020 ANNUAL BRIDGE REPORT

Table A – Bridge Inventory Detail
Table B – Bridge Condition Summary
Table C – Bridge Repairs

Table A - Bridge Inventory Detail

Bridge No.	Bridge Name	Facilities Carried	Year Built	Year Rebuilt	Sufficiency Rating	Structurally Deficient (SD) / Functionally Obsolete (FO)	Scour Code	Load Posted	NBI Bridge	City ID
CLARK COUNTY										
0001	KLINELINE	NE Hwy 99	2008	N/A	96.15	-	8	Open, No Restriction	Y	0000
0002	FELIDA	NW SEWARD ROAD	1985	N/A	90.2	-	8	Open, No Restriction	Y	0000
0006	GIBBONS CREEK	SE EVERGREEN WAY	1940	N/A	66.7	-	5	Posted for Load Restrictions	Y	0000
0011	WHIPPLE CREEK	NW 179 TH ST	1963	N/A	66.65	-	5	Posted for Load Restrictions	Y	0000
0012	KNAPPS STATION	NW KRIEGER RD	1962	N/A	79.18	-	5	Posted for Load Restrictions	Y	0000
0013	BURNT BRIDGE CREST	NE HAZEL DELL AVE	1996	N/A	87.88	-	N	Open, No Restriction	Y	0000
0026	BETTS	NE Salmon Creel Av	2006	N/A	99.3	-	8	Open, No Restriction	Y	0000
0030	FLATWOOD	NE 239TH ST	1935	1951	66.27	-	4	Posted for Load Restrictions	Y	0000
0032	KNOWLES	NE SALMON CREEK AV	1963	N/A	79.9	-	5	Open, No Restriction	N	0000
0033	PLEASANT VALLEY	NE 50TH AVE	1960	N/A	59.76	FO	7	Posted for Load Restrictions	Y	0000
0036	WILSON	NE 72ND AVE	1994	N/A	78.67	-	8	Open, No Restriction	Y	0000
0039	GLENWOOD	NE 139TH ST	1936	1955	70.43	-	5	Open, No Restriction	N	0000
0051	DOLLAR'S CORNER	72ND AVE	2015	N/A	96.43	-	5	Open, No Restriction	Y	0000
0054	HUBER	NE 259TH ST	1940	1951	63.38	-	5	Open, No Restriction	N	0000
0056	PIONEER	NE 259TH ST	1941	1951	68.54	-	5	Open, No Restriction	N	0000
0059	BRATTON (CATTLE PASS)	NE JENNY CREEK RD	1956	N/A	76.16	-	5	Open, No Restriction	N	0000
0063	CARSON	NE 67TH AVE	1957	N/A	57.65	-	5	Posted for Load Restrictions	Y	0000
0065	CEDAR CREEK	NE Etna Road	2017	N/A	99.91	-	8	Open, No Restriction	Y	0000
0069	GRIST MILL	GRIST MILL RD	1994	N/A	83.95	-	5	Open, No Restriction	Y	0000
0075	DAYTON	CEDAR CREEK RD	1930	1955	67.2	FO	7	Open, No Restriction	Y	0000
0094	BLAKER	NE 142 AVE	1953	N/A	77.77	-	5	Open, No Restriction	N	0000
0096	ROCK CREEK	ROCK CRK RD	1949	N/A	66.01	FO	5	Posted for Load Restrictions	Y	0000
0100	HEISSON	NE 172ND AVENUE	1999	N/A	97.27	-	8	Open, No Restriction	Y	0000
0102	KEPFER	J R ANDERSON RD	1959	N/A	60.05	-	5	Open, No Restriction	Y	0000
0107	JA MOORE	J A MOORE RD	1932	1954	73.51	-	8	Open, No Restriction	N	0000
0108	HEITMAN	J A MOORE RD	1930	1958	62.28	FO	5	Open, No Restriction	Y	0000
0116	LUCIA FALLS	NE HANTWICK RD	1937	2005	63.75	-	8	Posted for Load Restrictions	Y	0000
0120	BIG TREE CREEK	LUCIA FALLS ROAD	1940	1959	75.18	-	7	Open, No Restriction	Y	0000
0127	ARCH MCKEE	NE GERBER MCKEE RD	1934	1958	72.66	-	3	Open, No Restriction	N	0000
0167	VANCAMP	NE 217TH AVE	1991	N/A	98.82	-	5	Open, No Restriction	Y	0000
0168	MATNEY	NE 68TH ST	1938	1955	47.81	SD	5	Posted for Load Restrictions	Y	0000
0169	MATNEY SOUTH	NE 232ND AVE	1930	1953	46.57	-	3	Posted for Load Restrictions	Y	0000
0196	WASHOUGAL RIVER	NE VERNON RD	1998	N/A	86.61	FO	8	Open, No Restriction	Y	0000
0201	BRUSH PRAIRIE	NE 156TH ST.	1960	N/A	77.02	-	7	Posted for Load Restrictions	Y	0000
0203	BOULDER CREEK	NE LESSARD ROAD	1960	N/A	73.04	-	3	Open, No Restriction	N	0000
0211	167TH SALMON	NE 167TH AVE	1963	N/A	68.42	-	3	Open, No Restriction	Y	0000
0212	JC WARD	NE 182ND AVE	1960	N/A	68.49	FO	7	Posted for Load Restrictions	Y	0000
0213	MORGAN	NE 182ND AVE	1956	N/A	43.79	SD	4	Posted for Load Restrictions	Y	0000
0216	JOHN OTT	RISTO RD	1958	N/A	76.58	FO	8	Open, No Restriction	Y	0000
0217	VENERSBORG	NE RISTO ROAD	1941	1954	52.79	FO	5	Posted for Load Restrictions	Y	0000
0222	167TH MORGAN	NE 167TH AVE	1954	N/A	55.8	FO	5	Posted for Load Restrictions	Y	0000
0225	DUDLEY	NE 199TH ST	1962	N/A	89.33	-	8	Open, No Restriction	Y	0000
0229	172 ND AVE	172nd Ave	2009	N/A	78.01	-	8	Posted for Load Restrictions	Y	0000
0230	FIFTH PLAIN CREEK	NE 88TH STREET	2016	N/A	99.76	-	8	Open, No Restriction	Y	0000
0231	CHINA DITCH	NE WARD ROAD	2009	N/A	98.53	-	8	Open, No Restriction	Y	0000

Table A - Bridge Inventory Detail

Bridge No.	Bridge Name	Facilities Carried	Year Built	Year Rebuilt	Sufficiency Rating	Structurally Deficient (SD) / Functionally Obsolete (FO)	Scour Code	Load Posted	NBI Bridge	City ID
0232	DAVIS	NE DAVIS RD.	1935	1953	7.86	-	2	Open, No Restriction	N	0000
0242	LEWIS RIVER	DOLE VALLEY ROAD	1961	N/A	85.63	-	8	Open, No Restriction	Y	0000
0244	ROCK CREEK	DOLE VALLEY ROAD	1975	N/A	69.51	FO	5	Open, No Restriction	Y	0000
0252	BLAIR ZEEK	NE BLAIR RD	1961	N/A	65.51	FO	3	Open, No Restriction	Y	0000
0261	119TH CHINA	NE 119TH ST	1935	1949	81.23	-	5	Open, No Restriction	N	0000
0266	ALLWORTH	ALLWORTH RD.	1954	N/A	65.78	-	3	Open, No Restriction	N	0000
0267	CRESAP	CRESAP RD	1956	N/A	77.39	-	5	Open, No Restriction	N	0000
0272	202ND SHANGHAI	NE 202ND AVE.	1961	N/A	71.52	-	5	Open, No Restriction	N	0000
0273	DAY BREAK	DAYBREAK ROAD	1966	N/A	68.64	-	4	Open, No Restriction	Y	0000
0274	SHANGHAI CREEK	NE 212TH AVE	1955	N/A	74.64	-	4	Open, No Restriction	N	0000
0275	VAN ATTA	NE 112TH AVE.	1960	N/A	59.52	-	3	Posted for Load Restrictions	Y	0000
0294	LEHTO	NE LEHTO RD	1972	N/A	55.62	FO	3	Open, No Restriction	Y	0000
0299	LANDON	CC LANDON ROAD	1955	N/A	58.18	-	4	Posted for Load Restrictions	Y	0000
0307	LITTLE WASHOUGAL	SE BLAIR ROAD	1930	1959	68.83	-	5	Open, No Restriction	Y	0000
0308	BONNEVILLE	NE 222TH AVE	1955	N/A	77.47	-	3	Open, No Restriction	N	0000
0320P	NW 149TH PED BRIDGE	PEDESTRIAN BRIDGE	2005	N/A	N/A	-	8	Open, No Restriction	N	1350
0326	N.E. 2ND AVENUE	N.E. 2ND AVENUE	1985	N/A	85.93	-	5	Open, No Restriction	Y	0000
0327	ALKI ROAD	ALKI ROAD	1985	N/A	80.38	-	4	Open, No Restriction	Y	0000
0330	PADDEN	NE 107TH AVENUE	1999	N/A	97.82	-	N	Open, No Restriction	Y	0000
0331	SALMON CR	Caples Road	1923	N/A	76.99	FO	5	Open, No Restriction	Y	0000
0332	WOODIN CREEK BRIDGE	STATE ROUTE 503	1900	N/A	82.22	-	3	Open, No Restriction	N	0000
0337	LA LONDE CULVERT	NE 119TH AVENUE	2003	N/A	84.78	-	5	Open, No Restriction	N	0000
0338	SALMON CREEK CULVERT	NE SALMON CREEK AV	2002	N/A	81.51	-	5	Open, No Restriction	N	0000
0339	PADDEN WEST CULVERTS	PADDEN PARKWAY	2003	N/A	81.69	-	8	Open, No Restriction	N	0000
0340	JOHN CREEK CULVERT	CEDAR CREEK ROAD	1999	N/A	80	-	5	Open, No Restriction	N	0000
0341	AMBOY/CEDAR CRK CULVERT	AMBOY ROAD	1999	N/A	81.99	-	4	Open, No Restriction	Y	0000
0342	ROCKWELL CREEK	N E 23RD AVE	2004	N/A	87.2	-	9	Open, No Restriction	Y	0000
0343	CURTAIN CREEK CULVERT	NE 119TH STREET	2015	N/A	97.42	-	8	Open, No Restriction	Y	0000
0344	CARTY ROAD CULVERT	NW CARTY ROAD	2016	N/A	99.43	-	8	Open, No Restriction	Y	0000
0345	NE 10TH AVE	NE 10TH AVE	2018	N/A	99.64	-	9	Open, No Restriction	Y	0000
1406	LITTLE WASHOUGAL R	WASHOUGAL RIVER RD	1949	N/A	64.93	FO	5	Open, No Restriction	Y	0000
1409	COUGAR CREEK	WASHOUGAL RIVER RD	2012	N/A	94.08	-	8	Open, No Restriction	Y	0000
205/30P	PADDEN PARKWAY PED BR	PEDESTRIAN BR	2003	N/A	N/A	-	N	Open, No Restriction	Y	1350
BATTLE GROUND										
0205	NONE	NE 142ND AVE	1958	N/A	76.13	FO	5	Open, No Restriction	Y	0060
0336	WOODIN CREEK CULVERT	NE 199TH STREET	2003	N/A	96.5	-	5	Open, No Restriction	Y	0060
CAMAS										
CAMAS-010	WASHOUGAL RIVER BRIDGE	NE 3 AVE.	1947	1969	58.89	FO	3	Open, No Restriction	Y	0145
CAMAS-020	DIVISION STREET BRIDGE	DIVISION STREET	1960	N/A	75.74	FO	8	Posted for Load Restrictions	Y	0145
CAMAS-030	DALLAS STREET	DALLAS STREET	1919	N/A	44.36	FO	8	Posted for Load Restrictions	Y	0145
CAMAS-040	CAMAS MEADOWS	CAMAS MEADOWS DRV.	2000	N/A	98.92	-	8	Open, No Restriction	Y	0145
CAMAS-050	Woodburn Drive	NE Woodburn Drive	2013	N/A	93.13	-	8	Open, No Restriction	Y	0145
CAMAS-060	LACAMAS	NE GOODWIN RD	1933	1957	63.85	FO	3	Open, No Restriction	Y	0145

Table A - Bridge Inventory Detail

Bridge No.	Bridge Name	Facilities Carried	Year Built	Year Rebuilt	Sufficiency Rating	Structurally Deficient (SD) / Functionally Obsolete (FO)	Scour Code	Load Posted	NBI Bridge	City ID
LA CENTER										
0021	LA CENTER	LA CENTER ROAD	2001	N/A	82.37	-	8	Open, No Restriction	Y	0640
RIDGEFIELD										
RIDGEFD-1	GEE CREEK-ABRAMS PARK	DIVISION ST	1975	N/A	63.98	FO	4	Open, No Restriction	Y	1085
RIDGEFD-2	HERON RIDGE	HERON DRIVE	2003	N/A	92.07	-	5	Open, No Restriction	Y	1085
VANCOUVER										
0005	MINNEHAHA	NE MINNEHAHA ST	1972	N/A	88.86	-	N	Open, No Restriction	Y	1350
0038	39th Street RR O/C	NW 39th Street	2010	N/A	99.86	-	N	Open, No Restriction	Y	1350
0162	BURTON ROAD	NE BURTON RD	2005	N/A	96.29	-	8	Open, No Restriction	Y	1350
0328	CORPORATE WOODS BRIDGE	NE 110TH AVE	1989	N/A	99.95	-	5	Open, No Restriction	Y	1350
0329	NE 15TH AVENUE BRIDGE	NE 15TH AVENUE	1984	N/A	99.72	-	5	Open, No Restriction	Y	1350
1350	BURNT BRIDGE CRK CULVERT	DEVINE ROAD	1978	N/A	76.86	-	5	Open, No Restriction	N	1350
1351	PORT OF VANCOUVER	NW 26TH AVENUE	2000	N/A	92.48	-	N	Open, No Restriction	Y	1350
1352	BURNT BRIDGE CREEK	NE 86TH AVENUE	2001	N/A	97.12	-	8	Open, No Restriction	Y	1350
4236	EVERGREEN BLVD. OVERPASS	EVERGREEN BLVD.	1969	N/A	78.67	-	N	Open, No Restriction	Y	1350
4891	FRUIT VALLEY RD OVERPASS	FRUIT VALLEY ROAD	1948	N/A	47.65	SD	N	Posted for Load Restrictions	Y	1350
501/8E	BNRR OC	FOURTH PLAIN BLVD.	1962	N/A	49.51	SD	N	Posted for Load Restrictions	Y	1350
501/8W	BNRR OC	FOURTH PLAIN BLVD.	1986	N/A	82.28	-	N	Open, No Restriction	Y	1350
501/10C	VANCOUVER LK FLUSHING CN	SR 501	1990	N/A	86.14	-	8	Open, No Restriction	Y	1350
WASHOUGAL										
Washou-1	ORCHARD VIEW	Fairway Drive	2008	N/A	97.94	-	8	Open, No Restriction	Y	1385
1402	BN/SF RR O/C	WASHOUGAL RIVER RD	1965	N/A	75.4	FO	N	Open, No Restriction	Y	1385
1404	WASHOUGAL RIVER BRIDGE	WASHOUGAL RIVER RD	1993	N/A	90.07	-	5	Open, No Restriction	Y	1385

Table B - Bridge Condition Summary

Agency	Total Bridges in Program	Bridge Condition			Structurally Deficient[4]	Functionally Obsolete[5]	Scour Critica[6]	Fracture Critical[7]
		Good[1]	Fair[2]	Poor[3]				
Clark County	76	54	21	1	2	14	11	0
City of Battle Ground	2	2	0	0	0	1	0	0
City of Camas	6	3	3	0	0	4	2	0
City of La Center	1	1	0	0	0	0	0	0
City of Ridgefield	2	1	1	0	0	1	0	0
City of Vancouver	13	11	2	0	2	0	0	1
City of Washougal	3	3	0	0	0	1	0	0
Railroad (BNSF-5, CC-1)	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Totals	109	75	27	1	4	21	13	1

Notes:

1 - Good corresponds to a Sufficiency Rating between 99.9 and 66.7.

2 - Fair corresponds to a Sufficiency Rating between 66.6 and 33.3.

3 - Good corresponds to a Sufficiency Rating between 33.2 and 0.

4 - Structurally Deficient - Impacted ability to carry intended traffic loads.

5 - Functionally Obsolete - Narrow structure and geometry are not based on current standards.

6 - Scour Critical - Foundations considered unstable, shallow, or stream is undermining stability of structure. Requires more extensive monitoring and inspection during and after flood events.

7 - Fracture Critical - Defined as a structure with 2 load paths with steel members in tension, could cause immediate catastrophic failure if member fail. Requires more extensive inspection and testing.

Table C - Bridge Repairs

	Structure ID	Bridge No.	Bridge Name	Agency ID	City ID	Repair ID
CLARK COUNTY						
	8095600	0203	BOULDER CREEK	02	0000	Remove log from under bridge if still there next summer.
	8627800	0013	BURNT BRIDGE CREST	02	0000	Install gate for access below.
	8323300	0032	KNOWLES	02	0000	Consider removing two trees behind NE wingwall.
	8611700	0036	WILSON	02	0000	Patch pothole forming at joint in SB lane on south end of bridge.
	8282000	0201	BRUSH PRAIRIE	02	0000	Remove tree under bridge.
	8814500	0231	CHINA DITCH	02	0000	NW concrete corner of guard rail broken and needs to form, place, and reconnect.
	8186600	0275	VAN ATTA	02	0000	Replace 4 rotted and split guardrail posts. 2 on west side (Posts 4 & 7), 2 on east side (Posts 2 & 3). Posts numbers begin at Abutment 1. Repair 1'x1' spall in AC in Span 1, right wheel lane. Repair rip rap in SE corner to redirect creek evenly under bridge. Rip rap has fallen in and is directing creek flow directly at Pier 2.
CAMAS						
	8507100	CAMAS-010	WASHOUGAL RIVER BRIDGE	04	0145	Tighten pin nuts at bearings 2A-West and 2C-East to eliminate gap.
RIDGEFIELD						
	8531500	RIDGEFD-1	GEE CREEK-ABRAMS PARK	04	1085	Remove and replace AC overlay. Consider use of timber running planks to prolong life of timber deck. Care should be given to skid resistance of running planks. Monitor exposed footings. Repair pothole at the east transition.
	8706200	RIDGEFD-2	HERON RIDGE	04	1085	Consider adding riprap around the SW corner exposed footing and abutment pipe.
VANCOUVER						
	006786A	501/8E	BNRR OC	04	1350	Replace missing bolt on Span 2 east rail.
	8711300	1351	PORT OF VANCOUVER	04	1350	Coping and wall along SEW wall NE approach has two spalls and crack should be repaired. Need recommended repair by structural.
WASHOUGAL						
	007597A	1402	BN/SF RR O/C	04	1385	Clean up garbage and apparent unsanitary conditions under bridge both ends.

2020 Annual Bridge Report

Rani Jaafar, Ph.D., P.E.

June 15, 2021


Grist Mill Bridge No. 69

Outline

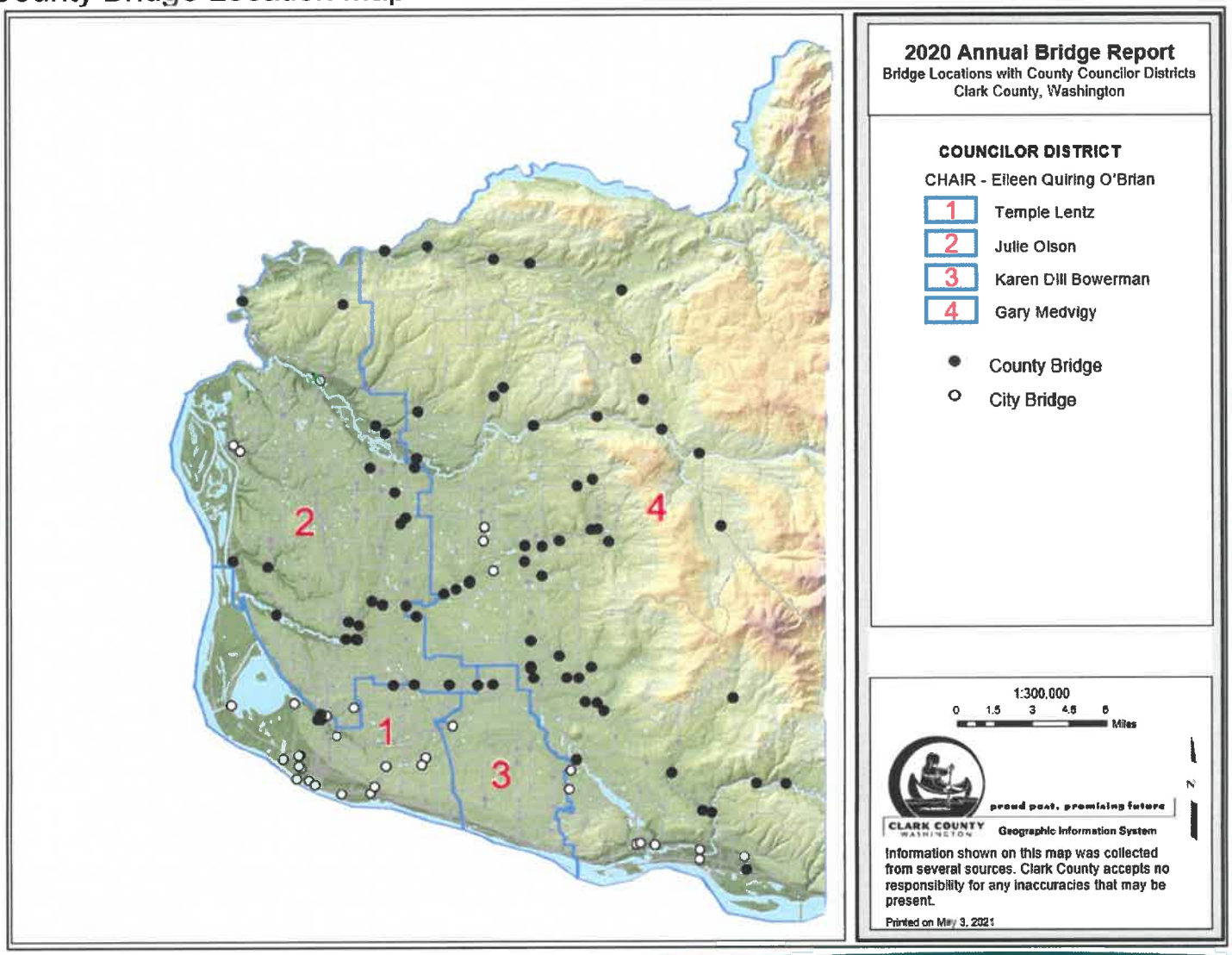
- **Introduction**
- **Bridge Inventory**
- **Bridge Inspection Findings and Repairs**
- **Restricted Bridges**
- **Bridge Construction/Accomplishments in 2020**
- **Future Plans**

Report Summary

- **Introduction**
  - This report is prepared to fulfill the requirements of the Washington Administrative Code (WAC) 136-20-060.
  - This report summarizes the county's 2020 bridge program, activities, and findings.
- **Bridge Inventory**
  - There are 111 public bridges located throughout Clark County:
    - 78 bridges owned by Clark County.
    - 27 bridges owned by cities and inspected under interagency agreements.
    - 6 bridges owned by railroads and inspected for roadway safety

Report Summary

Clark County Bridge Location Map



Report Summary

- **Bridge Inspection Findings and Repairs**
  - NBIS mandates that public agencies inspect and report on all bridges at least once every 24 months.
  - A total of 48 bridge inspections were conducted in 2020:
    - 34 County bridges
    - 14 City bridges

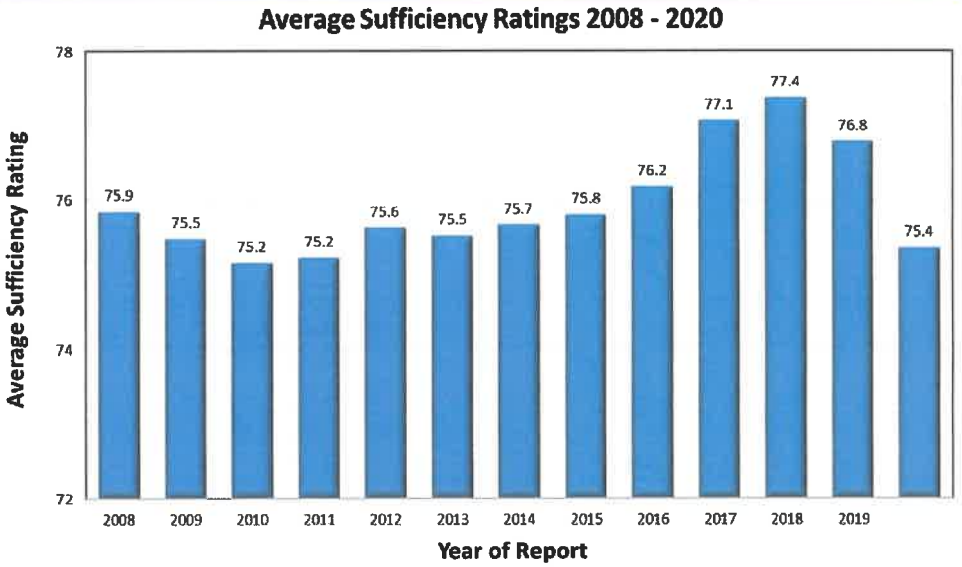


Figure 2: Average Annual Sufficiency Rating (SR) Clark County's Bridges

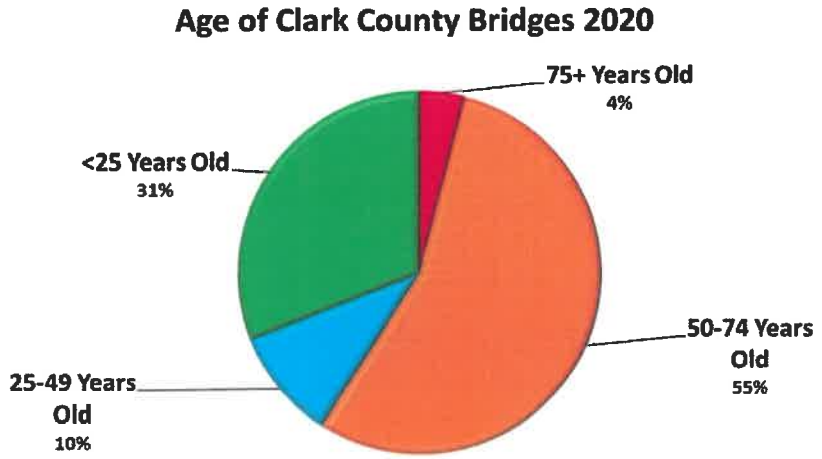


Figure 3: Distribution of Clark County's Bridges by Age

Report Summary

- **Restricted Bridges**
  - Three (3) bridges are height restricted.
  - Eighteen (18) county bridges are weight restricted.

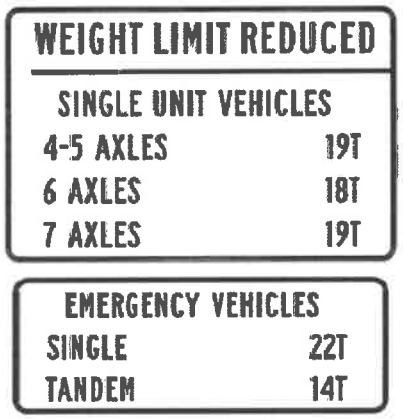


Figure 4: Morgan Bridge No. 213 weight restrictions

Table 2: Height and Load Limited Bridges in Clark County

Bridge Name	Bridge No.	Action
CCRR Undercrossing – Old 99	20141	Height Restricted
Grist Mill	69	Height Restricted
BNRR – Marine Park Way OC	99906-05	Height Restricted
Gibbons Creek	6	Weight Restricted
Whipple Creek	11	Weight Restricted
Knapps Station	12	Weight Restricted
Flatwood	30	Weight Restricted
Pleasant Valley	33	Weight Restricted
Carson	63	Weight Restricted
Rock Creek	96	Weight Restricted
Lucia Falls	116	Weight Restricted
Matney	168	Weight Restricted
Matney South	169	Weight Restricted
Brush Prairie	201	Weight Restricted
JC Ward	212	Weight Restricted
Morgan	213	Weight Restricted
Venersborg	217	Weight Restricted
167th Morgan	222	Weight Restricted
172nd Avenue	229	Weight Restricted
Van Atta	275	Weight Restricted
Landon	299	Weight Restricted

Report Summary – Bridge Construction and Accomplishments in 2020

- Continued development of procedures and resources for emergency response to natural disasters.
- Completed load rating evaluations on all NBI Bridges.
- Replaced two undersized culverts along Manley Road with NBI fish passable culverts.
- In process of designing the strengthening / rehabilitation on nine load-restricted bridges which will eliminate load restrictions on these bridges.
- Completed the scour rehabilitation work at Smith Bridge No. 211, Lehto Bridge No. 294, and Salmon Creek Bridge No. 331.
- Completed the design plans and specifications for the replacement of Davis Bridge No. 232. The construction is scheduled for the summer of 2022.
- Submitted grant applications to: (1) perform strengthening / rehabilitation work on four load-restricted and (2) scour rehabilitation work on two scour critical bridges.

Report Summary – Future Plans

- Install real-time flood monitoring sensors at preselected county bridges.
- Continue to support Parks and Railroad with their bridge needs.
- Coordinate bridge barrier-railing upgrades with requirements for guardrail improvements by identifying safety needs.
- Continue to review private bridge designs.
- Enhance emergency preparedness.
- Complete load-rating evaluations on all non-NBI bridges.
- Participate in statewide discussions about programmatic approaches and asset management for short-span bridges.
- Complete the strengthening of nine load-restricted bridges.
- Reconstruct Davis Bridge No. 232.
- Develop priority matrix to programmatically address identified bridge concerns.

Bridge Condition Summary

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City of Washougal	3	3	0	0	0	1	0	0
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Thank you!

Comments and questions

Clark County Public Service Center

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